Algebra Ch 2 Test Review
Name:_____
Date:_____Per:_____

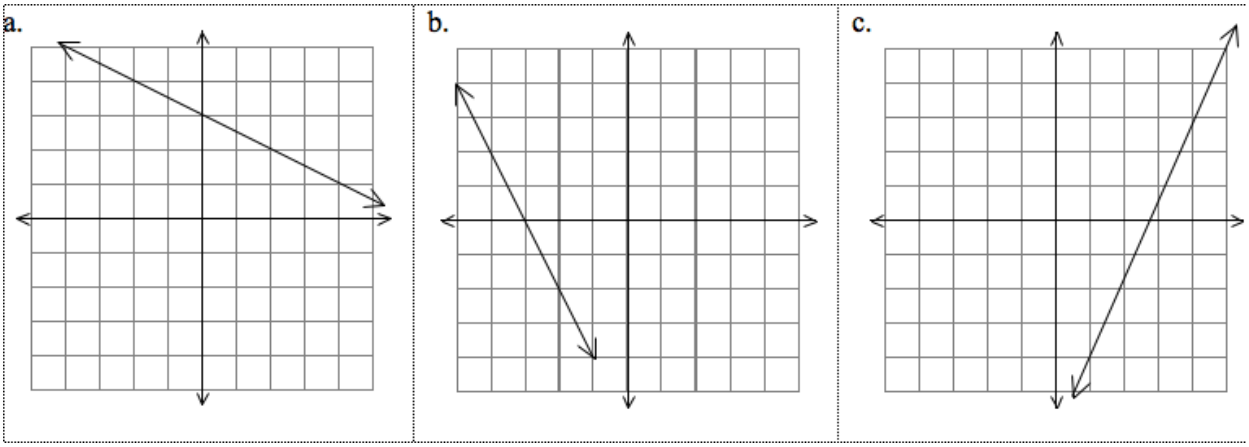
1. When determining the equation of the line that passes through the points (22, -14) and (-6, 10), Letty calculated the slope to be $\frac{1}{7}$. Did she calculate the slope correctly? If so, what is the equation of the line? If not, what did she do wrong? Explain completely.

2. If a line started at

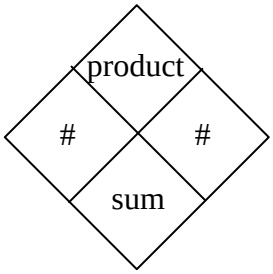
a. the point (0, 5) and has a slope of 4, what is the equation of the line?

b. the point (–2, 6) and has a slope of –3, what is the equation of the line?

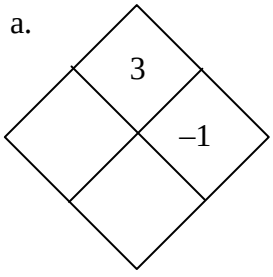
3. What is the equation of each of these lines?



4. Solve the diamond problems below:



a.



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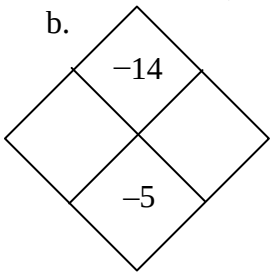
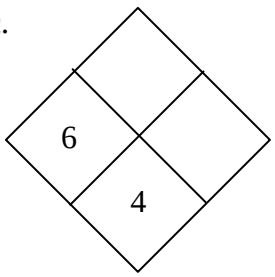


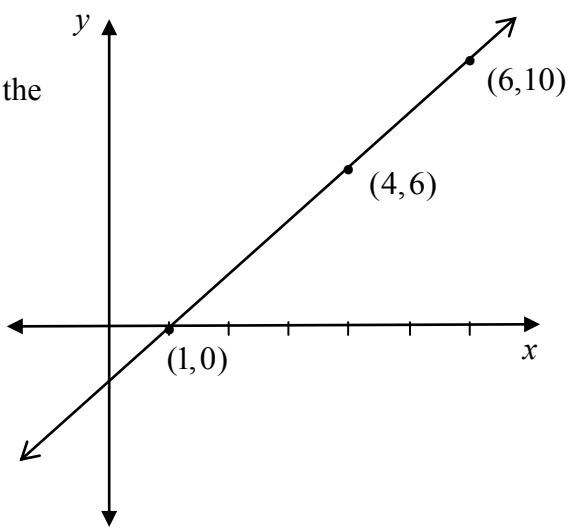
c.



5. Three points are named on the line at the right.

a. Find three more points that lie on the line to the right. Show or explain how you found your answer.

b. Find a rule for your line. Verify your rule is correct using the three original points.



6. Decide whether each of the following points is on the line $y = -\frac{1}{2}x + 1$. For each point, show your work or explain how you decided.

a. (0, 1) b. (1, 0) c. (–40, 21) d. (20, –11)

7. Why does $\sqrt[3]{-8}$ equal –2 but $\sqrt{-4}$ does **not** equal –2 ? Explain completely.

8. Stardollars Coffee hosted a coffee-cup-stacking contest. Anthony noticed a pattern. He told the judges that Figure 100 would have 203 coffee cups stacked up. Was he correct? Use mathematics to prove or disprove Anthony's claim. Include a table, a graph, and a rule (equation) in your explanation.


Figure 1


Figure 2


Figure 3

9. Sketch a graph that fits each description below and then write the correct equation. Put all three graphs on one set of axes and label them clearly.

a. This pattern has 2 tiles in Figure 0 and adds 5 tiles in each new figure.

b. This pattern shrinks by 2 tiles between figures and starts with 12 tiles in Figure 0.

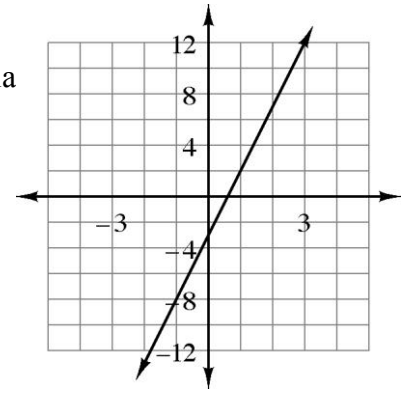
c. This pattern has a growth factor of 3 and a *y*-intercept of 0.

10. For the rule $y = 6x - 4$:

a. Draw a complete graph.

b. Describe your graph. Include the following ideas in your description: x-intercept, y-intercept, growth factor, straight or curved line, etc.

11. Find a rule for the following graph using two different methods. Show your work and expla each method.



12. For each equation below, solve for x. Show all work.

a. $7x - 3 = 4x + 3$ b. $6(-2 - x) = -5(2x + 4)$

13. Examine this tile pattern and answer the questions below.

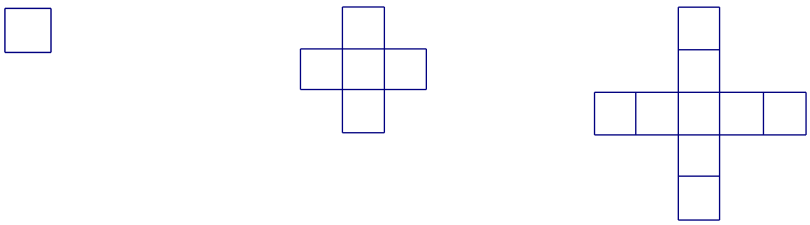


Figure 1 **Figure 2** **Figure 3**

a. Draw figures 4 and 5 on your paper.

b. Describe how the pattern grows and any other patterns you notice.

Bonus: How many squares would figure 100 have? Explain how you know.

14. Study the tile pattern below.

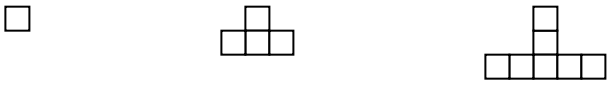


Figure 0 Figure 1 Figure 2

a. Draw Figure 3 and Figure 4. Explain how the pattern grows.

b. Write an equation (rule) for the number of tiles in the pattern.

c. Explain how the growth factor appears in your equation.

15. Study the tile pattern below.

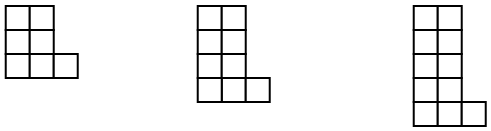


Figure 1 Figure 2 Figure 3

a. Make an $x \rightarrow y$ table comparing the figure number and the total number of tiles in each of the tile figures.

b. Use the $x \rightarrow y$ table to graph the pattern.

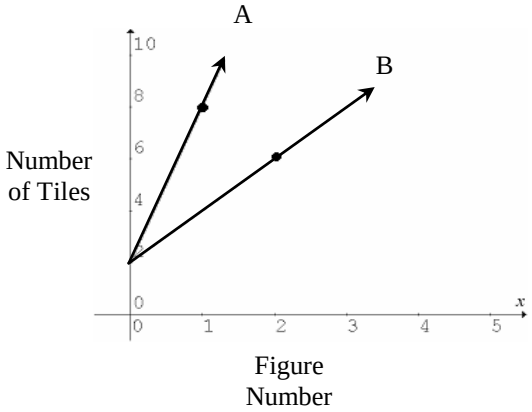
c. Explain how the growth pattern in the figures is connected to the numbers in the table and the line that you graphed.

16. The graph at right provides information about two tile patterns.

a. Describe each tile pattern based on the information provided by the graph.

b. How are the patterns alike?

c. How are the patterns different? How can you tell?

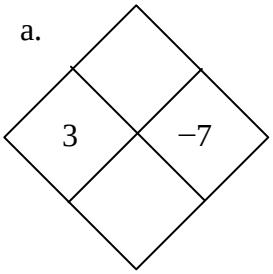


17. Graph the following rules on one set of axes. Label each line with its equation, the *y*-intercept, and a growth triangle.

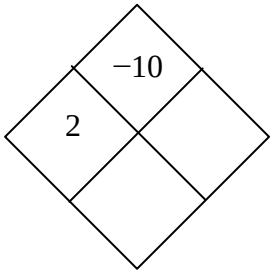
a. $y = 4x - 3$ b. $y = -2x + 5$ c. $y = -5x - 1$

18. Complete each of these Diamond Problems:

a.



b.



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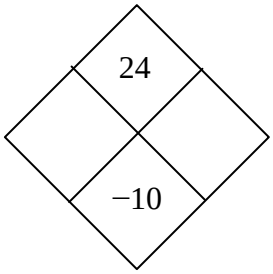

19. Examine the tile pattern below.

Figure 1 **Figure 2** **Figure 3** **Figure 4**

a. Draw figures 5 and 6 on your paper.

b. Describe how the pattern grows.

Bonus: How many squares will be in the 10^{th} figure? Show how you found your answer.

20. Complete the following pattern and describe the rule in words.

4, 9, 14, 19, ____ , ____ , ____